2011 Workplace and Equal Opportunity Survey of Reserve Component Members

Statistical Methodology Report

2011 WORKPLACE AND EQUAL OPPORTUNITYSURVEY OF RESERVE COMPONENT MEMBERS:
STATISTICAL METHODOLOGY REPORT

Acknowledgments

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Executive Summary

This report describes sample design, sample selection, weighting, and variance estimation procedures for the *2011 Workplace and Equal Opportunity Survey of Reserve Component Members* (*2011 WEOR*).

The sampling frame consisted of 835,318 records drawn from the June 2011 Reserve Components Common Personnel Data System (RCCPDS) Master File. The *2011 WEOR* used a single-stage stratified sample design. The allocation was non-proportional, with over-sampling of small domains and population subgroups having low response rates. The total sample size was based on precision requirements for key reporting domains (reporting categories). The allocation was determined by an optimization algorithm that minimized the cost of the survey while meeting the precision requirements.

Analytic weights were created to account for unequal selection probabilities and varying response rates among population subgroups. First, sample records were classified for weighting according to eligibility for the survey and completion of the return. Second, the sampling weights (the inverse of the selection probabilities) were adjusted to account for sample members whose eligibility could not be determined. Third, the eligibility-adjusted weights were adjusted to account for eligible sample members who did not return usable questionnaires. Fourth, the adjusted weights were post-stratified to population totals. Finally, sampling strata were collapsed to create strata for variance estimation by Taylor series linearization.

Location, completion, and response rates were calculated for the sample and for population subgroups after the field closed and data were received. These rates were computed according to the RR3 recommendations of the American Association of Public Opinion Researchers (AAPOR, 2011). The weighted location rate was 99%, the weighted completion rate was 25%, and the weighted response rate was 25%.

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2011 WORKPLACE AND EQUAL OPPORTUNITY SURVEY OF RESERVE COMPONENT MEMBERS: STATISTICAL METHODOLOGY REPORT

Introduction

This report describes the sample design, sample selection, weighting, and variance estimation procedures for the *2011 Workplace and Equal Opportunity Survey of Reserve Component Members* (*2011 WEOR*). The first section of this report presents the sample design and sample selection procedures. The second and third sections provide information regarding the processing of sample and frame files and the statistical methodology used for weighting the sample of respondents.

Response rates for the *2011 WEOR* have also been computed in accordance with the RR3 recommendations of the American Association of Public Opinion Researchers (AAPOR, 2011). The response rates for the full sample and for subgroups and the computation methods are described in the last section of this report.

Sample Design and Selection

Target Population

The *2011 WEOR* was designed to represent individuals meeting all of the following criteria:

- A member of the Selected Reserve who (1) are in Reserve Unit, Active Guard/Reserve (AGR/TAR/AR;[1] Title 10 and Title 32), and Individual Mobilization Augmentee (IMA) programs from the Army National Guard (ARNG), U.S. Army Reserve (USAR), U.S. Naval Reserve (USNR), U.S. Marine Corps Reserve (USMCR), Air National Guard (ANG), U.S. Air Force Reserve (USAFR) or U.S. Coast Guard Reserve (USCGR).;

- At least 6 months of service by the beginning of the survey fielding period;

- Up to and including paygrade O6;

- Fielding of the survey began December 29, 2011 and ended on March 19, 2012**.**

Sampling Frame

The sampling frame consisted of 835,318 records drawn from the June 2011 Reserve Components Common Personnel Data System (RCCPDS) Master File. Auxiliary information used to develop the frame was obtained from the June 2011 CTS and June 2011 Family File and additional personnel records that were compiled before the scheduled starting date of the survey

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[1] Names for this program vary among Reserve components: AGR/TAR/AR is a combination of Active Guard/Reserve (AGR), Training and Administration of the Reserve (TAR), and Active Reserve (AR).

field period: the July 2011 Defense Enrollment Eligibility Reporting System (DEERS) Point-in-Time Extracts (PITE), and the June 2011 CTS file. Individuals were included on the frame based on membership in both the August 2011 update of the RCCPDS file. Sample members who subsequently became ineligible were identified by comparison to the September 2011 updates of the RCCPDS and the October 2011 PITE. Individuals not identified as ineligible by personnel records (for example, due to illness or incarceration) and those who became ineligible during the period of December 29, 2011 through April 17, 2012 were identified by self-report or proxy.

Sample Design

The *2011 WEOR* used a single-stage stratified design. Three population characteristics defined the stratification dimensions: Race/Ethnicity, Reserve Program, and Paygrade group. In addition, IMAs were put into their own separate stratum. These are shown in Table 1. The frame was partitioned into 146 strata, produced by cross-classification of the stratification variables. In some circumstances, levels were collapsed within dimensions. For example, U.S. Marine Corps Reserve was collapsed all paygrade (E1-O6) to form a stratum representing Multi-Racial group. Service and Reserve program were preserved (not collapsed).

Within each stratum, individuals were selected with equal probability and without replacement. Because allocation of the sample was not proportional to the size of the strata, selection probabilities varied among strata, so individuals were not selected with equal probability overall. Non-proportional allocation was used to achieve adequate sample sizes for small subpopulations of analytic interest, the survey reporting domains. These domains included subpopulations defined by the stratification characteristics, as well as others. Key reporting domains variables are also shown in Table 1.

Sample Allocation

The total sample size was based on precision requirements for key reporting domains. Given estimated variable survey costs and anticipated eligibility and response rates, an optimization algorithm determined the minimum-cost allocation that simultaneously satisfied the domain precision requirements. Anticipated eligibility and response rates were based on the *2007 Workplace and Equal Opportunity Survey of Reserve Component Members* (*2007 WEOR*).

The allocation was accomplished by means of the DMDC Sample Planning Tool, Version 2.1 (Dever and Mason, 2003). This application is based on the method originally developed by J. R. Chromy (1987), and is described in Mason, Wheeless, George, Dever, Riemer, and Elig (1995). The Tool defines domain variance equations in terms of unknown stratum sample sizes and user-specified precision constraints. A cost function is defined in terms of the unknown stratum sample sizes and per-unit costs of data collection, editing, and processing. The variance equations are solved simultaneously, subject to the constraints imposed, for the sample sizes that minimize the cost function. Eligibility rates modify the prevalence rates that are components of the variance equations, thus affecting the allocation; response rates inflate the allocation, thus affecting the final sample size.

Although 85 domains had been defined for the *2011 WEOR* allocation, precision constraints were imposed only on those of primary interest. Generally, the precision requirement

was that an estimated prevalence rate of 0.5 have a 95 percent confidence interval half-width no greater than 0.05. Constraints were manipulated to produce an allocation that achieved satisfactory precision for the domains of interest at a particular sample size.

The total *2011 WEOR* sample size was 80,033. Sample sizes by Service are shown in Table 2 for the levels of the stratification variables. The allocation by strata and by reporting domains are presented in Appendix A, and Appendix B respectively.

Table 1.
Variables for Stratification and Key Reporting Domains

Variable	Categories
DoD	DoD
	Not DoD
Race/Ethnicity[*]	Hipanic
	White
	Black
	American Indian/Alaskan Native
	Asian
	Hawaiian/Pacific Islander
	Multi Race
Organization[*]	Army National Guard
	US Army Reserve
	US Naval Reserve
	US Marine Corps Reserve
	Air National Guard
	US Coast Guard Reserve
	US Air Force Reserve
Paygrade Group 1[*]	E1-E4
	E5-E9
	W1-W5
	O1-O3
	O4-O6
Sex	Male
	Female
Paygrade Group 2	Enlisted
	Officers
Program	TPU/Unknown
	Military Technicians
	AGR/TAR
	IMA

Note. [*] denotes stratification variable

Table 2.
Sample Size by Stratification Variables

Stratification Variable	Total	Army National Guard	US Army Reserve	US Naval Reserve	US Marine Corps Reserve	Air National Guard	US Air Force Reserve	US Coast Guard Reserve
Total	80,033	17,373	13,555	9,525	16,604	8,890	10,386	3,700
Race/Ethnicity								
Hispanic	18,017	3,972	3,168	2,322	4,795	1,364	1,638	758
White	27,194	5,477	3,237	1,488	6,830	3,635	4,205	2,322
Black	18,657	4,312	3,886	2,730	3,009	2,097	2,451	172
American Indian/Alaskan Native	3,097	1,319	337	725	231	232	187	66
Asian	7,749	2,293	1,668	916	1,212	728	859	73
Hawaiian/Pacific Islander	2,556	0	1,259	273	245	367	380	32
Multi Race	2,763	0	0	1,071	282	467	666	277
Paygrade Group								
E1-E4	40,183	10,176	7,284	4,227	10,429	3,088	3,440	1,539
E5-E9	29,343	5,903	4,283	4,158	4,278	4,807	4,609	1,305
W1-W5	639	280	133	7	157	0	0	62
O1-O3	4,134	668	842	466	652	413	636	457
O4-O6	5,734	346	1,013	667	1,088	582	1,701	337

Weighting

Analytical weights for the *WEOR1101* were created to account for unequal probabilities of selection and varying response rates among population subgroups. Sampling weights were computed as the inverse of the selection probabilities and then adjusted for non-response. The adjusted weights were post-stratified to match population totals and to reduce bias unaccounted by the previous weighting steps.

Case Dispositions

First, case dispositions were assigned for weighting based on eligibility for the survey and completion of the survey. Execution of the weighting process and computation of response rates both depend on this classification.

Final case dispositions for weighting were determined using information from personnel records, field operations (the Survey Control System or SCS), and returned surveys. No single source of information is both complete and correct; inconsistencies among sources were resolved according to the order of precedence shown in Table 3.

Table 3.
Case Dispositions for Weighting

Case Disposition (Samp_DC)	Information Source	Conditions
1. Record ineligible	Personnel record	Sample ineligible—deceased or no address available in DEERS.
2. Ineligible by self- or proxy-report	Survey Control System (SCS)	"Retired," "No longer employed by DoD," or "Deceased."
3. Ineligible by survey self-report	First survey question	Active duty member retired or separated from military; Reservist no longer member of a Reserve Component
4. Eligible—complete response	Item response rate	Item response is at least 50%.
5. Eligible—incomplete response	Item response rate	Survey isn't blank but item response is less than 50%.
6. Unknown eligibility, complete response	Personnel record, first survey question, item response rate	Incomplete personnel record and first survey item is missing and item response is at least 50%;
7. Unknown eligibility, incomplete response	Personnel record, first survey question, and item response rate	Incomplete personnel record AND first survey question is missing AND return is not blank AND item response is less than 50%;
8. Active refusal–refused, deployed, other	SCS	Reason refused is any
		Reason ineligible is "other"
		Reason survey is blank is "refused-too long", "refused-inappropriate/intrusive", "refused-other", "ineligible-other", "unreachable at this address", "refused by current resident", "concerned about security/confidentiality."
9. Blank return	SCS	No reason given.
10. PND—postal non-deliverable	SCS	Postal non-deliverable or original non-locatable.
11. Non-respondent	Remainder	Remainder

This order of execution is critical to resolving case dispositions. For example, suppose a sample person refused the survey, with the reason that it was too long; in the absence of any other information, the disposition would be "eligible nonrespondent." Given also a proxy report that the sample person had been hospitalized and was unable to complete the survey, the disposition would be "ineligible."

Case disposition counts for the *WEOR1101* are shown in Table 4.

Table 4.
Sample Size by Case Disposition Categories

Case Disposition Category and (Code Value)	Sample Size
1. Record ineligible	1,660
2. Ineligible by self- or proxy-report	90
3. Ineligible by survey self report	384
4. Eligible—complete response	16,454
5. Eligible—incomplete response	1,569
8. Active refusal–refused, deployed, other	673
9. Blank return	640
10. PND—postal non-deliverable	1,827
11. Non-respondents	56,736
Total	**80,033**

Nonresponse Adjustments and Final Weights

After case dispositions were resolved, the sampling weights were adjusted for nonresponse. First, the sampling weights for cases of known eligibility (SAMP_DC = 2, 3, 4, 5) were adjusted to account for cases of unknown eligibility (Samp_DC = 8, 9, 10, 11). Next, the eligibility-adjusted weights for eligible respondents (Samp_DC = 4) were adjusted to account for eligible sample members who had not returned a completed survey (SAMP_DC = 5).

The weighting adjustment factors for eligibility and completion were computed as the inverse of model-predicted probabilities. First, a logistic regression model was used to predict the probability of eligibility for the survey (known eligibility vs. unknown eligibility). A second logistic regression model was used to predict the probability of response among eligible sample members (complete response vs. non-response). CHAID (Chi-squared Automatic Interaction Detector) was used to determine the best predictors for each logistic model. The models were weighted; the first by the sampling weight, and the second by the eligibility-adjusted weight. Predictors included the following population characteristics: Organization, Program, Deployment status, Paygrade group, Sex, Family status, Race/Ethnicity, and Combat status. Both models included main effects and second-order interactions.

Finally, the weights were post-stratified to match population totals and to reduce bias unaccounted for by the previous weighting adjustments. Post-stratification cells were defined by the cross-classification of Race/Ethnicity, Organization, and Paygrade Group. Within each post-stratification cell, the non-response-adjusted weights for eligible respondents and self-reported ineligibles (SAMP_DC= 2, 3, 4) were adjusted to match population counts. Note that one complete eligible respondent (SAMP_DC = 4) requested to be removed; thus, decreasing the total eligible respondents to 16,453 that received final weights.

Distribution of Weights and Adjustment Factors. Table 5 provides summaries of the distributions of the sampling weights, intermediate weights, final weights, and adjustment factors

by eligibility status. Eligible respondents are those individuals who were not only eligible to participate in the survey, but also completed at least 50% of the survey items. Record ineligible individuals are those who were not eligible to participate in the survey according to administrative records; no weights were computed for these cases. Table 6 indicates the sums of base weights, intermediate weights, and final weights by eligibility status.

Table 5.
Distribution of Weights and Adjustment Factors by Eligibility Status

Eligibility Status	Statistic	Sampling Weight	Eligibility Status Adjusted Weight	Complete Eligible Response Adjusted Weight	Final Weight With Non-response and Post-stratification Factors	Eligibility Status Factor	Complete Eligible Response Factor	Post-stratification Factor
Eligible Respondents	N	16,453	16,453	16,453	16,453	16,453	16,453	16,453
	MIN	1.0	2.3	2.5	2.3	1.4	1.0	0.6
	MAX	64.7	830.6	944.1	953.4	22.2	1.2	1.7
	MEAN	12.1	44.1	48.2	49.2	4.2	1.1	1.0
	STD	14.8	75.5	84.1	85.6	3.7	0.0	0.1
	CV	1.2	1.7	1.7	1.7	0.9	0.0	0.1
Self/Proxy Ineligibles	N	474	474	474	474	474	0.0	474
	MIN	1.0	2.7	2.7	2.8	1.4		0.6
	MAX	64.7	830.6	830.6	838.7	22.2		1.5
	MEAN	11.5	53.3	53.3	54.3	5.5		1.0
	STD	14.8	98.1	98.1	99.6	5.1		0.1
	CV	1.3	1.8	1.8	1.8	0.9		0.1
Non-Respondents	N	61,446	61,446	61,446	61,446	61,446	1,570	0.0
	MIN	1.0	0.0	0.0	0.0	0.0	0.0	
	MAX	64.7	830.6	90.4	0.0	22.2	1.1	
	MEAN	10.0	1.1	0.0	0.0	0.1	0.0	
	STD	14.5	14.4	0.4	0.0	1.0	0.0	
	CV	1.4	12.9	247.9	0.0	8.1	39.6	
Record Ineligibles	N	1,660	1,660	1,660	1,660	0.0	0.0	0.0
	MIN	1.0	1.0	1.0	0.0			
	MAX	64.7	64.7	64.7	0.0			
	MEAN	9.5	9.5	9.5	0.0			
	STD	14.4	14.4	14.4	0.0			
	CV	1.5	1.5	1.5	0.0			

Table 6.
Sum of Weights by Eligibility Status

Eligibility Category	Sum of Sampling Weights (inverse of probability of selection)	Sum of Eligibility Status Adjusted Weights	Sum of Complete Eligible Response Adjusted Weights	Sum of Final Weights With Nonresponse and Post-stratification Adjustments
Eligible Respondents	198,925	725,532	793,810	809,592
Self/Proxy Report Ineligible	5,452	25,287	25,287	25,726
Non-respondents	615,242	68,789	90	0
Record Ineligible	15,699	15,699	15,699	0
Total	**835,318**	**835,307**	**834,886**	**835,318**

Variance Estimation

Analysis of the *WEOR1101* data requires a variance estimation procedure that accounts for the complex sample design. The final step of the weighting process was to define strata for variance estimation by Taylor series linearization. The *WEOR1101* variance estimation strata correspond closely to the design strata; however, it was *necessary* to collapse some sampling strata containing fewer than 22 cases with nonzero final weights into similar strata. One hundred and thirty five variance estimation strata were defined for the *WEOR1101*.

Location, Completion, and Response Rates

Location, completion, and response rates were calculated in accordance with guidelines established by the Council of American Survey Research Organizations (CASRO). The procedure is based on recommendations for Sample Type II response rates (CASRO, 1982). This definition corresponds to The American Association for Public Opinion Research (AAPOR) RR3 (AAPOR, 2011), which estimates the proportion of eligibles among cases of unknown eligibility.

Location, completion, and response rates were computed for the *WEOR1101* as follows:

The *location rate* (LR) is defined as

$$LR = \frac{\text{adjusted located sample}}{\text{adjusted eligible sample}} = \frac{N_L}{N_E}.$$

The *completion rate* (CR) is defined as

$$CR = \frac{\text{usable responses}}{\text{adjusted located sample}} = \frac{N_R}{N_L}.$$

The *response rate* (RR) is defined as

$$RR = \frac{\text{usable responses}}{\text{adjusted eligible sample}} = \frac{N_R}{N_E}.$$

where

N_L = Adjusted located sample

N_E = Adjusted eligible sample

N_R = Usable responses.

To identify the cases that contribute to the components of LR, CR, and RR, the disposition codes were grouped as shown in Table 7. Record Ineligibles were excluded from calculation of the eligibility rate.

Table 7.
Disposition Codes for CASRO Response Rates

Response Category	SAMP_DC Values
Eligible Sample	4, 5, 8, 9, 10, 11
Located Sample	4, 5, 8, 9, 11
Usable Responses	4
Not Returned	11
Eligibility Determined	2, 3, 4, 5, 8, 9
Self Report Ineligible	2, 3

Ineligibility Rate

The ineligibility rate (IR) is defined as

$$IR = \frac{\text{self reported ineligible cases}}{\text{eligible determined cases}}.$$

Estimated Ineligible Postal Non-Deliverable/Not Located Rate

The estimated ineligible postal non-deliverable not located rate (IPNDR) is defined as

$$IPNDR = (Eligible\ Sample - Located\ Sample) * IR.$$

Estimated Ineligible Nonresponse

The estimated ineligible nonresponse (EINR) is defined as

$$EINR = (Not\ returned) * IR.$$

Adjusted Location Rate

The adjusted location rate (ALR) is defined as

$$ALR = \frac{(Located\ Sample - EINR)}{(Eligible\ Sample - IPNDR - EINR)}.$$

Adjusted Completion Rate

The adjusted completion rate (ACR) is defined as

$$ACR = \frac{(Eligible\ response)}{(Located\ Sample - EINR)}.$$

Adjusted Response Rate

The adjusted response rate (ARR) is defined as

$$ARR = \frac{(Eligible\ response)}{(Eligible\ Sample - IPNDR - EINR)}.$$

Unweighted and weighted sample counts used to compute the overall response rates are shown in Table 8.

The final response rate is the product of the location rate and the completion rate. Sample Counts and weighted estimates are shown in Table 8. Weighted estimates were computed using the sampling weights.

Weighted location, completion, and response rates for selected *WEOR1101* domains are shown in Table 9.

Location, completion, and response rates for the full sample and stratification levels are shown in Table 10.

Table 8.
Comparison of the Final Sample Relative to the Drawn Sample

	Sample counts		Weighted estimates of population	
	n	**%**	**n**	**%**
Drawn sample & Population	80,033		835,318	
Ineligible on master files	-1,660	2.07%	-15,699	1.88%
Self-reported ineligible	-474	0.59%	-5,452	0.65%
Total: Ineligible	-2,134	2.67%	-21,151	2.53%
Eligible sample	77,899	97.33%	814,167	97.47%
Not located (estimated ineligible)	-44	0.05%	-273	0.03%
Not located (estimated eligible)	-1,783	2.23%	-11,538	1.38%
Total not located	-1,827	2.28%	-11,811	1.41%
Located sample	76,072	95.05%	802,356	96.05%
Requested removal from survey mailings	-673	0.84%	-8,865	1.06%
Returned blank	-640	0.80%	-6,775	0.81%
Skipped key questions	-1,569	1.96%	-15,818	1.89%
Did not return a survey (estimated ineligible)	-1,358	1.70%	-13,222	1.58%
Did not return a survey (estimated eligible)	-55,378	69.19%	-558,722	66.89%
Total: Nonresponse	-59,618	74.49%	-603,401	72.24%
Usable responses	16,454	20.56%	198,955	23.82%

[1] The observed counts of the various response categories are somewhat skewed by the oversampling employed in the sample design. Consequently, weighted counts are also provided because they are more representative of response propensity in the entire population.

[2] The categories labeled 'Not located . . .' and 'Did not return a survey . . .' have been broken down into additional subcategories labeled '(estimated ineligible)' and '(estimated eligible)'. The ineligible counts are based on an ineligible rate = Self-report ineligibles / (Eligible Respondents + Unusable responses + Self-reported ineligibles). Unusable responses include sample members who requested removal, returned blank surveys, or skipped key questions. The eligible counts are the complement of the ineligible count.

A total of 2,134 sample members (2.67%) were lost from the final sample through classification as ineligible. Elimination of ineligibles resulted in decreasing the sample to 97.33% (N=77,899) of its original size. Because of the address update procedure, less than 2.28% of the drawn sample (1,827 of 80,033) was lost because the sample members could not be located. Losses attributable to either ineligibility or unlocatability resulted in a sample that was 95.05% of the drawn sample. Nonrespondents included the following groups: sample members who contacted the operations contractor and asked to have their names removed from the survey

mailing list, and 56,736 sample members who did not return a survey. At the conclusion of the survey fielding, 16,454 eligible, locatable sample members had returned usable surveys. Note, one person requested to be removed; thus, resulting in 16,453 members who received final weights.

Table 9.
Location, Completion, and Response Rates

Type of Rate	Computation	Weighted	Unweighted
Location	Adjusted located sample/Adjusted eligible sample	98.6%	97.7%
Completion	Usable responses/Adjusted located sample	25.2%	22.0%
Response	Usable responses/Adjusted eligible sample	24.8%	21.5%

Table 10.
Rates for Full Sample and Stratification Level

Domain Variable	Domain	Sample	Usable Response	Sum of Weight	Eligibility Adjusted Response	Location Rate	Completion Rate	Response Rate
Sample	Sample	80,033	16,454	835,318	24.939 ± 0.476	98.6%	25.2%	25.4%
Race	Hispanic	18,017	3,295	82,776	23.061 ± 0.709	97.4%	23.6%	23.0%
	White/Unknown	27,194	6,513	590,590	25.990 ± 0.649	98.8%	26.2%	25.9%
	Black	18,657	3,282	121,902	21.103 ± 0.680	98.1%	21.4%	21.0%
	AIAN	3,097	513	6,592	19.778 ± 1.205	97.6%	20.2%	19.7%
	Asian	7,749	1,717	24,130	26.269 ± 0.923	98.6%	26.5%	26.2%
	NHPI	2,556	531	3,853	23.620 ± 1.097	97.9%	24.1%	23.6%
	Multi-Racial	2,763	603	5,474	26.344 ± 1.387	96.8%	27.1%	26.3%
Organization	Army National Guard	17,373	2,983	352,844	20.627 ± 0.794	99.1%	20.7%	20.5%
	US Army Reserve	13,555	2,904	199,944	23.942 ± 1.008	98.6%	24.2%	23.9%
	US Naval Reserve	9,525	2,120	62,570	30.450 ± 1.632	94.2%	32.2%	30.3%
	US Marine Corps Reserve	16,604	1,601	38,580	9.081 ± 0.392	96.3%	9.3%	9.0%
	Air National Guard	8,890	3,008	104,275	38.611 ± 1.294	99.6%	38.7%	38.5%
	US Air Force Reserve	10,386	3,026	69,359	33.000 ± 1.445	99.4%	33.1%	32.9%
	US Coast Guard Reserve	3,700	812	7,747	22.952 ± 1.305	100.0%	22.9%	22.9%
Paygrade	E1-E4	40,183	3,997	353,627	10.860 ± 0.574	98.2%	11.0%	10.8%
	E5-E9	29,343	8,596	358,501	33.657 ± 0.785	98.8%	34.0%	33.6%
	W1-W5	639	239	11,415	41.349 ± 5.244	99.6%	41.4%	41.2%
	O1-O3	4,134	1,276	54,462	32.313 ± 2.398	98.9%	32.6%	32.3%
	O4-O6	5,734	2,346	57,314	45.583 ± 2.230	98.9%	46.0%	45.5%

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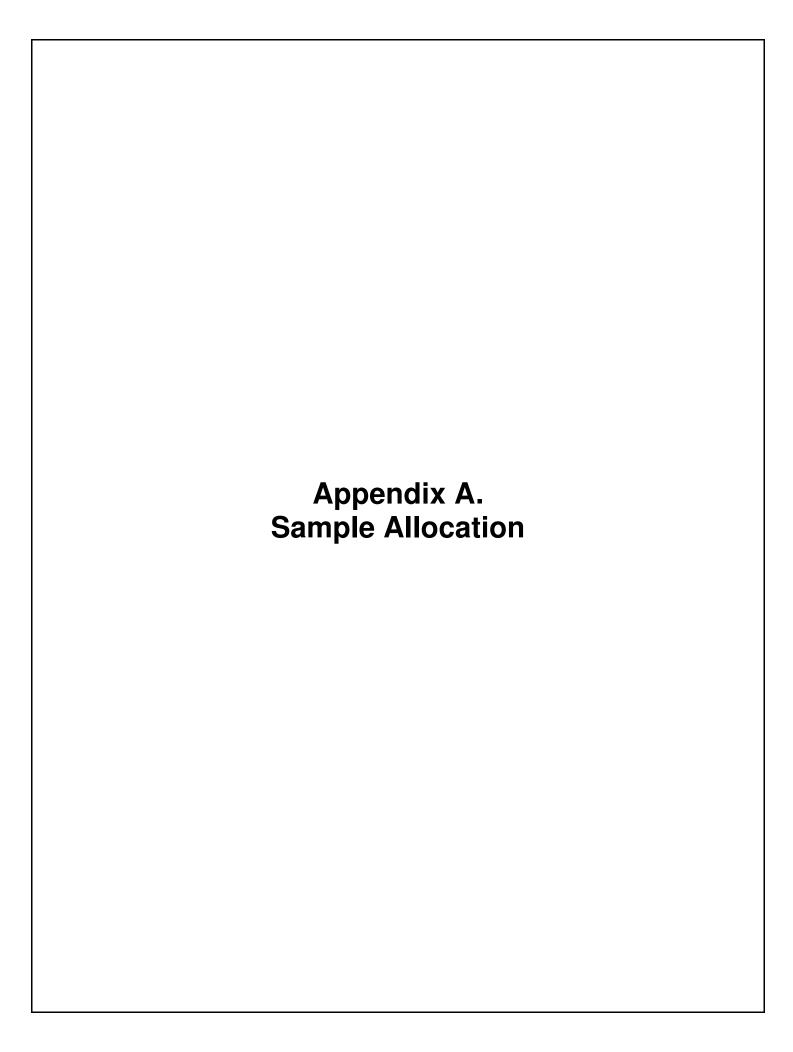
Appendix A.
Sample Allocation

Table A-1.
Sample Allocation

Strata	Stratum Size	Expected Respondents	Sample Size	Percent Sampled	Label
1	17,094	260	2,752	16.10	001Hispanic_U.S. Army National Guard_E1-E4
2	8,619	220	875	10.15	002Hispanic_U.S. Army National Guard_E5-E6
3	2,587	90	203	7.85	003Hispanic_U.S. Army National Guard_E7-W5
4	1,215	36	102	8.40	004Hispanic_U.S. Army National Guard_O1-O3
5	570	22	40	7.02	005Hispanic_U.S. Army National Guard_O4-O6
6	13,773	234	1,993	14.47	006Hispanic_U.S. Army Reserve_E1-E4
7	7,802	204	766	9.82	007Hispanic_U.S. Army Reserve_E5-E6
8	2,843	110	195	6.86	008Hispanic_U.S. Army Reserve_E7-W5
9	1,297	40	108	8.33	009Hispanic_U.S. Army Reserve_O1-O3
10	819	33	55	6.72	010Hispanic_U.S. Army Reserve_O4-O6
11	3,115	164	1,028	33.00	011Hispanic_U.S. Naval Reserve_E1-E4
12	4,585	325	1,051	22.92	012Hispanic_U.S. Naval Reserve_E5-E6
13	475	48	84	17.68	013Hispanic_U.S. Naval Reserve_E7-W5
14	396	33	80	20.20	014Hispanic_U.S. Naval Reserve_O1-O3
15	462	46	79	17.10	015Hispanic_U.S. Naval Reserve_O4-O6
16	3,358	199	3,358	100.00	016Hispanic_U.S. Marine Corps Reserve_E1-E4
17	1,072	96	979	91.32	017Hispanic_U.S. Marine Corps Reserve_E5-E6
18	396	72	314	79.29	018Hispanic_U.S. Marine Corps Reserve_E7-O6
19	908	59	290	31.94	019Hispanic_Air National Guard_E1-E4
20	3,064	272	691	22.55	020Hispanic_Air National Guard_E5-E6
21	1,390	148	262	18.85	021Hispanic_Air National Guard_E7-W5
22	282	28	61	21.63	022Hispanic_Air National Guard_O1-O3
23	310	34	60	19.35	023Hispanic_Air National Guard_O4-O6
24	860	67	392	45.58	024Hispanic_U.S. Air Force Reserve_E1-E4
25	2,272	242	718	31.60	025Hispanic_U.S. Air Force Reserve_E5-E6
26	972	133	240	24.69	026Hispanic_U.S. Air Force Reserve_E7-W5
27	426	56	109	25.59	027Hispanic_U.S. Air Force Reserve_O1-O6
28	339	96	339	100.00	028Hispanic_U.S. Coast Guard Reserve_E1-E4
29	419	176	419	100.00	029Hispanic_U.S. Coast Guard Reserve_E5-O6
30	127,052	263	2,093	1.65	030White_U.S. Army National Guard_E1-E4

Table A-1. (continued)

Strata	Stratum Size	Expected Respondents	Sample Size	Percent Sampled	Label
31	79,367	638	2,061	2.60	031White_U.S. Army National Guard_E5-E6
32	31,974	460	819	2.56	032White_U.S. Army National Guard_E7-W5
33	18,182	131	295	1.62	033White_U.S. Army National Guard_O1-O3
34	10,025	130	209	2.08	034White_U.S. Army National Guard_O4-O6
35	53,591	152	1,137	2.12	035White_U.S. Army Reserve_E1-E4
36	28,271	191	667	2.36	036White_U.S. Army Reserve_E5-E6
37	14,041	191	301	2.14	037White_U.S. Army Reserve_E7-W5
38	10,969	86	205	1.87	038White_U.S. Army Reserve_O1-O3
39	9,580	93	148	1.54	039White_U.S. Army Reserve_O4-O6
40	6,263	94	500	7.98	040White_U.S. Naval Reserve_E1-E4
41	16,019	135	391	2.44	041White_U.S. Naval Reserve_E5-E6
42	3,828	49	76	1.99	042White_U.S. Naval Reserve_E7-W5
43	3,454	78	165	4.78	043White_U.S. Naval Reserve_O1-O3
44	7,529	199	316	4.20	044White_U.S. Naval Reserve_O4-O6
45	19,327	216	3,451	17.86	045White_U.S. Marine Corps Reserve_E1-E4
46	4,002	139	1,246	31.13	046White_U.S. Marine Corps Reserve_E5-E6
47	1,078	114	418	38.78	047White_U.S. Marine Corps Reserve_E7-W5
48	577	86	405	70.19	048White_U.S. Marine Corps Reserve_O1-O3
49	929	175	522	56.19	049White_U.S. Marine Corps Reserve_O4-O6
50	19,885	253	1,270	6.39	050White_Air National Guard_E1-E4
51	33,621	440	1,148	3.41	051White_Air National Guard_E5-E6
52	18,574	382	638	3.43	052White_Air National Guard_E7-W5
53	4,557	100	218	4.78	053White_Air National Guard_O1-O3
54	7,790	200	361	4.63	054White_Air National Guard_O4-O6
55	10,993	180	961	8.74	055White_U.S. Air Force Reserve_E1-E4
56	15,535	179	504	3.24	056White_U.S. Air Force Reserve_E5-E6
57	8,661	169	274	3.16	057White_U.S. Air Force Reserve_E7-W5
58	2,192	29	75	3.42	058White_U.S. Air Force Reserve_O1-O3
59	5,716	112	190	3.32	059White_U.S. Air Force Reserve_O4-O6
60	2,140	234	954	44.58	060White_U.S. Coast Guard Reserve_E1-E4
61	2,283	162	429	18.79	061White_U.S. Coast Guard Reserve_E5-E6
62	925	189	326	35.24	062White_U.S. Coast Guard Reserve_E7-W5

Table A-1. (continued)

Strata	Stratum Size	Expected Respondents	Sample Size	Percent Sampled	Label
63	486	173	339	69.75	063White_U.S. Coast Guard Reserve_O1-O3
64	421	162	274	65.08	064White_U.S. Coast Guard Reserve_O4-O6
65	24,459	239	2,862	11.70	065Black_U.S. Army National Guard_E1-E4
66	13,861	242	1,028	7.42	066Black_U.S. Army National Guard_E5-E6
67	4,476	108	267	5.97	067Black_U.S. Army National Guard_E7-W5
68	1,902	39	114	5.99	068Black_U.S. Army National Guard_O1-O3
69	773	20	41	5.30	069Black_U.S. Army National Guard_O4-O6
70	19,146	186	2,149	11.22	070Black_U.S. Army Reserve_E1-E4
71	11,430	182	847	7.41	071Black_U.S. Army Reserve_E5-E6
72	7,686	149	483	6.28	072Black_U.S. Army Reserve_E7-W5
73	3,027	59	184	6.08	073Black_U.S. Army Reserve_O1-O3
74	2,233	53	109	4.88	074Black_U.S. Army Reserve_O4-O6
75	3,111	154	1,185	38.09	075Black_U.S. Naval Reserve_E1-E4
76	4,802	335	1,254	26.11	076Black_U.S. Naval Reserve_E5-E6
77	584	59	118	20.21	077Black_U.S. Naval Reserve_E7-W5
78	388	32	86	22.16	078Black_U.S. Naval Reserve_O1-O3
79	435	42	86	19.77	079Black_U.S. Naval Reserve_O4-O6
80	2,129	210	2,129	100.00	080Black_U.S. Marine Corps Reserve_E1-E4
81	495	75	495	100.00	081Black_U.S. Marine Corps Reserve_E5-E6
82	309	77	309	100.00	082Black_U.S. Marine Corps Reserve_E7-O6
83	2,626	126	853	32.48	083Black_Air National Guard_E1-E4
84	3,675	252	817	22.23	084Black_Air National Guard_E5-E6
85	1,637	138	296	18.08	085Black_Air National Guard_E7-W5
86	271	21	55	20.30	086Black_Air National Guard_O1-O3
87	392	33	76	19.39	087Black_Air National Guard_O4-O6
88	4,212	160	1,151	27.33	088Black_U.S. Air Force Reserve_E1-E4
89	3,716	193	657	17.68	089Black_U.S. Air Force Reserve_E5-E6
90	1,847	126	256	13.86	090Black_U.S. Air Force Reserve_E7-W5
91	278	17	43	15.47	091Black_U.S. Air Force Reserve_O1-O3
92	344	23	49	14.24	092Black_U.S. Air Force Reserve_O4-O6
93	286	48	172	60.14	093Black_U.S. Coast Guard Reserve_All

Table A-1. (continued)

Strata	Stratum Size	Expected Respondents	Sample Size	Percent Sampled	Label
94	1,520	65	943	62.04	094Am Id/Alaskan Native_U.S. Army National Guard_E1-E4
95	762	57	269	35.30	095Am Id/Alaskan Native_U.S. Army National Guard_E5-E6
96	375	36	107	28.53	096Am Id/Alaskan Native_U.S. Army National Guard_E7-O6
97	685	55	178	25.99	097Am Id/Alaskan Native_U.S. Army Reserve_E1-E4
98	303	21	94	31.02	098Am Id/Alaskan Native_U.S. Army Reserve_E5-E6
99	270	26	61	22.59	099Am Id/Alaskan Native_U.S. Army Reserve_E7-O6
100	591	40	397	67.17	100Am Id/Alaskan Native_U.S. Naval Reserve_E1-E4
101	787	83	327	41.55	101Am Id/Alaskan Native_U.S. Naval Reserve_E5-O6
102	219	26	219	100.00	102Am Id/Alaskan Native_U.S. Marine Corps Reserve_All
103	423	43	164	38.77	103Am Id/Alaskan Native_Air National Guard_E1-E6
104	235	32	68	28.94	104Am Id/Alaskan Native_Air National Guard_E7-O6
105	277	39	176	63.54	105Am Id/Alaskan Native_U.S. Air Force Reserve_All
106	4,466	203	1,526	34.17	106Asian_U.S. Army National Guard_E1-E4
107	2,143	146	492	22.96	107Asian_U.S. Army National Guard_E5-E6
108	524	45	101	19.27	108Asian_U.S. Army National Guard_E7-W5
109	898	72	174	19.38	109Asian_U.S. Army National Guard_O1-O6
110	3,713	140	989	26.64	110Asian_U.S. Army Reserve_E1-E4
111	1,853	98	358	19.32	111Asian_U.S. Army Reserve_E5-E6
112	529	40	76	14.37	112Asian_U.S. Army Reserve_E7-W5
113	925	56	154	16.65	113Asian_U.S. Army Reserve_O1-O3
114	391	29	55	14.07	114Asian_U.S. Army Reserve_O4-O6
115	818	65	326	39.85	115Asian_U.S. Naval Reserve_E1-E4
116	1,370	141	425	31.02	116Asian_U.S. Naval Reserve_E5-E6
117	352	43	92	26.14	117Asian_U.S. Naval Reserve_E7-O3
118	302	39	73	24.17	118Asian_U.S. Naval Reserve_O4-O6
119	945	185	945	100.00	119Asian_U.S. Marine Corps Reserve_E1-E4
120	240	70	240	100.00	120Asian_U.S. Marine Corps Reserve_E5-O6
121	708	58	251	35.45	121Asian_Air National Guard_E1-E4
122	1,137	121	299	26.30	122Asian_Air National Guard_E5-E6
123	426	53	98	23.00	123Asian_Air National Guard_E7-W5

Table A-1. (continued)

Strata	Stratum Size	Expected Respondents	Sample Size	Percent Sampled	Label
124	320	37	80	25.00	124Asian_Air National Guard_O1-O6
125	556	74	334	60.07	125Asian_U.S. Air Force Reserve_E1-E4
126	583	98	265	45.45	126Asian_U.S. Air Force Reserve_E5-E6
127	446	88	177	39.69	127Asian_U.S. Air Force Reserve_E7-O6
128	1,089	86	838	76.95	128Hawaiian/Pac.Islander_U.S. Army Reserve_E1-E4
129	538	66	274	50.93	129Hawaiian/Pac.Islander_U.S. Army Reserve_E5-E6
130	353	54	144	40.79	130Hawaiian/Pac.Islander_U.S. Army Reserve_E7-O6
131	371	45	273	73.58	131Hawaiian/Pac.Islander_U.S. Naval Reserve_All
132	242	32	242	100.00	132Hawaiian/Pac.Islander_U.S. Marine Corps Reserve_All
133	656	92	367	55.95	133Hawaiian/Pac.Islander_Air National Guard_All
134	521	95	368	70.63	134Hawaiian/Pac.Islander_U.S. Air Force Reserve_All
135	1,226	78	665	54.24	135Multi-Racial_U.S. Naval Reserve_E1-E4
136	803	74	296	36.86	136Multi-Racial_U.S. Naval Reserve_E5-E6
137	385	46	110	28.57	137Multi-Racial_U.S. Naval Reserve_E7-O6
138	274	40	274	100.00	138Multi-Racial_U.S. Marine Corps Reserve_All
139	518	38	219	42.28	139Multi-Racial_Air National Guard_E1-E4
140	582	59	173	29.73	140Multi-Racial_Air National Guard_E5-E6
141	288	34	75	26.04	141Multi-Racial_Air National Guard_E7-O6
142	369	38	302	81.84	142Multi-Racial_U.S. Air Force Reserve_E1-E4
143	425	61	235	55.29	143Multi-Racial_U.S. Air Force Reserve_E5-E6
144	206	37	94	45.63	144Multi-Racial_U.S. Air Force Reserve_E7-O6
145	448	210	448	100.00	145AIAN/Asian/NHPI/Multi Race_U.S. Coast Guard Reserve_All
146	13,845	2,301	4,903	35.41	146IMA
Total	**835,318**	**19,435**	**80,033**		

Appendix B.
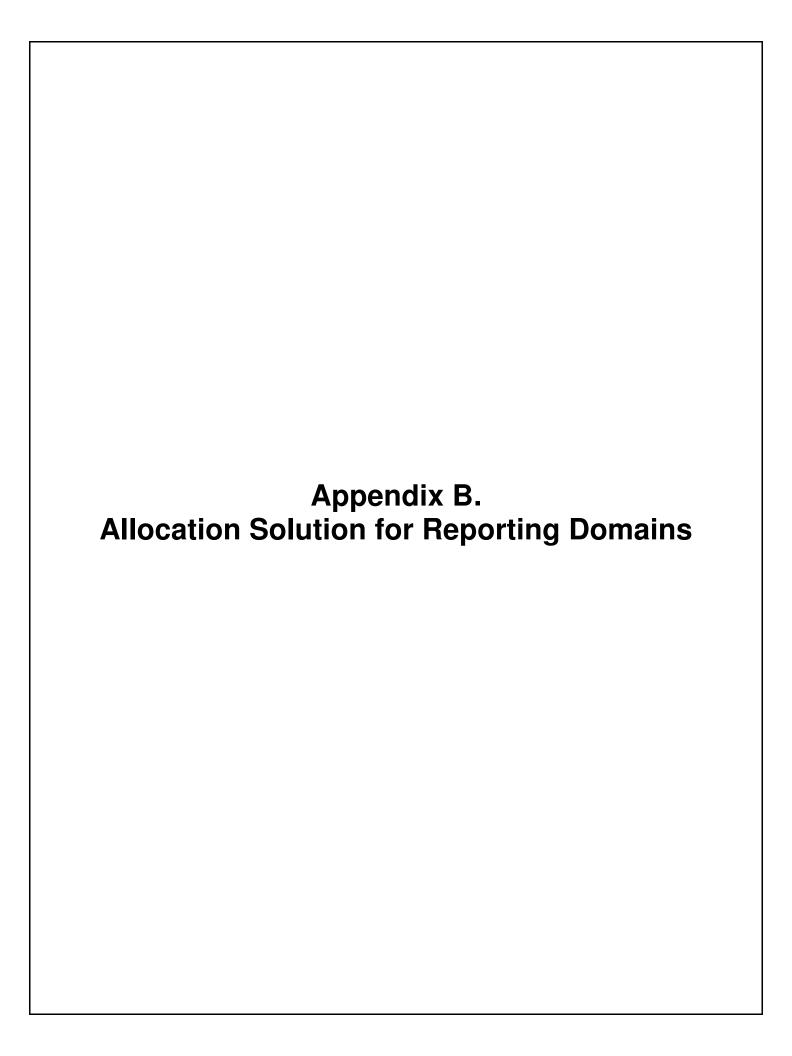# Allocation Solution for Reporting Domains

Table B-1.
Allocation Solution for Reporting Domains

Domain	Label	PopCount	Expected Sample Size	Estimated Sample Size	Pct Sampled	Design Effect
1	All Domains	835,318	19,435	79,219	9.58	3.59
2	DoD	827,571	17,985	75,558	9.22	3.38
3	DoD*Enlisted	705,277	13,680	66,001	9.45	3.33
4	DoD*E1-E4	350,873	4,596	38,398	11.01	3.45
5	DoD*E5-E9	354,404	9,084	27,640	7.90	2.07
6	DoD*Officers	122,294	4,305	9,560	7.91	2.62
7	DoD*O1-O3	53,907	1,431	3,658	6.83	2.39
8	DoD*O4-O6	56,857	2,610	5,327	9.53	2.38
9	DoD*Male	679,226	14,323	60,698	9.03	3.88
10	DoD*Female	148,345	3,662	14,859	10.12	6.23
11	DoD*White	570,118	7,157	23,760	4.20	2.59
12	DoD*Black	121,641	3,582	18,278	15.20	1.82
13	DoD*Hispanic	82,027	3,448	17,027	21.04	1.62
14	DoD*AIAN	6,527	536	2,968	46.44	1.23
15	DoD*Asian	24,067	1,971	7,554	31.91	1.29
16	DoD*NHPI	3,818	478	2,484	66.08	1.26
17	DoD*Multi Race	5,204	526	2,417	47.82	1.21
18	DoD*AGR/TAR	74,158	1,961	6,038	8.28	3.34
19	DoD*TPU/Unknown+Military Technicians+IMA	753,413	16,024	69,524	9.32	3.61
20	DoD*TPU/Unknown	678,757	12,330	61,071	9.08	3.37
21	DoD*Military Technicians	60,811	1,390	3,600	5.97	3.61
22	DoD*IMA	13,845	2,301	4,837	35.41	0.86
23	Army National Guard	352,844	3,522	17,259	4.92	2.34
24	Army National Guard*White	261,628	1,588	5,337	2.05	1.79
25	Army National Guard*Black	45,471	648	4,281	9.48	1.13
26	Army National Guard*Hispanic	30,085	628	3,943	13.20	1.10
27	Army National Guard*Other Race	10,688	624	3,580	33.79	1.03
28	Army National Guard*Enlisted	311,110	2,919	15,983	5.17	2.38
29	Army National Guard*E1-E4	174,591	1,030	10,133	5.83	2.21

Table B-1. (continued)

Domain	Label	PopCount	Expected Sample Size	Estimated Sample Size	Pct Sampled	Design Effect
30	Army National Guard*E5-E9	136,519	1,889	5,855	4.33	1.37
31	Army National Guard*Officers	41,734	603	1,278	3.09	1.53
32	US Army Reserve	199,910	3,092	13,413	6.77	2.44
33	US Army Reserve*White	116,357	1,037	3,113	2.70	2.05
34	US Army Reserve*Black	43,833	681	3,846	8.86	1.19
35	US Army Reserve*Hispanic	26,687	646	3,136	11.88	1.13
36	US Army Reserve*Other Race	10,778	692	3,226	30.31	1.15
37	US Army Reserve*Enlisted	165,191	2,183	11,431	6.98	2.30
38	US Army Reserve*E1-E4	91,998	853	7,237	7.92	2.21
39	US Army Reserve*E5-E9	73,193	1,330	4,199	5.81	1.69
40	US Army Reserve*Officers	34,719	908	1,983	5.78	2.35
41	US Naval Reserve	62,611	2,474	9,116	15.24	2.30
42	US Naval Reserve*White	35,391	544	1,371	4.03	1.41
43	US Naval Reserve*Black	9,329	623	2,591	29.29	1.09
44	US Naval Reserve*Hispanic	9,041	617	2,206	25.71	1.08
45	US Naval Reserve*Other Race	7,018	656	2,810	42.58	1.09
46	US Naval Reserve*Enlisted	48,768	1,902	7,999	17.21	2.53
47	US Naval Reserve*E1-E4	15,288	615	4,052	27.61	1.60
48	US Naval Reserve*E5-E9	33,480	1,287	3,962	12.46	2.93
49	US Naval Reserve*Officers	13,843	571	1,106	8.28	1.48
50	US Marine Corps Reserve	38,636	2,318	16,491	43.03	3.21
51	US Marine Corps Reserve*White	26,896	1,029	6,429	24.08	2.67
52	US Marine Corps Reserve*Black	3,157	399	2,980	95.42	2.45
53	US Marine Corps Reserve*Hispanic	5,247	437	4,752	91.48	1.32
54	US Marine Corps Reserve*Other Race	2,096	382	1,963	94.58	3.91
55	US Marine Corps Reserve*Enlisted	34,963	1,691	14,615	42.12	2.83
56	US Marine Corps Reserve*E1-E4	26,403	901	10,379	39.54	2.44
57	US Marine Corps Reserve*E5-E9	8,560	790	4,231	50.07	1.81
58	US Marine Corps Reserve*Officers	3,673	627	1,874	51.71	1.48
59	Air National Guard	104,275	3,053	8,858	8.53	1.61
60	Air National Guard*White	82,615	1,345	3,549	4.31	1.08

Table B-1. (continued)

Domain	Label	PopCount	Expected Sample Size	Estimated Sample Size	Pct Sampled	Design Effect
61	Air National Guard*Black	8,601	570	2,083	24.38	0.99
62	Air National Guard*Hispanic	5,954	541	1,358	22.91	0.94
63	Air National Guard*Other Race	5,293	567	1,787	33.89	0.94
64	Air National Guard*Enlisted	90,105	2,568	7,869	8.77	1.65
65	Air National Guard*E1-E4	25,051	585	3,079	12.31	1.52
66	Air National Guard*E5-E9	65,054	1,983	4,792	7.40	1.68
67	Air National Guard*Officers	14,170	485	989	7.00	1.26
68	US Air Force Reserve	69,295	3,527	10,258	14.96	2.39
69	US Air Force Reserve*White	47,231	1,615	3,956	8.46	2.15
70	US Air Force Reserve*Black	11,250	661	2,434	21.85	1.15
71	US Air Force Reserve*Hispanic	5,013	578	1,611	32.52	1.01
72	US Air Force Reserve*Other Race	3,743	590	2,054	55.53	0.97
73	US Air Force Reserve*Enlisted	55,140	2,417	7,939	14.54	2.19
74	US Air Force Reserve*E1-E4	17,542	612	3,417	19.62	1.59
75	US Air Force Reserve*E5-E9	37,598	1,805	4,525	12.17	2.50
76	US Air Force Reserve*Officers	14,155	1,110	2,319	16.58	2.85
77	US Coast Guard Reserve	7,747	1,450	3,656	47.76	1.42
78	US Coast Guard Reserve*White	5,258	774	1,911	36.79	1.46
79	US Coast Guard Reserve*Black	286	48	170	60.14	0.86
80	US Coast Guard Reserve*Hispanic	758	272	748	100.00	1.17
81	US Coast Guard Reserve*Other Race	448	210	442	100.00	1.24
82	US Coast Guard Reserve*Enlisted	6,507	1,007	2,811	43.73	1.36
83	US Coast Guard Reserve*E1-E4	2,769	433	1,523	55.57	1.19
84	US Coast Guard Reserve*E5-E9	3,738	574	1,290	34.96	1.52
85	US Coast Guard Reserve*Officers	1,240	443	846	68.92	1.02

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14. ABSTRACT

This report describes sample design, sample selection, weighting, and variance estimation procedures for the 2011 Workplace and Equal Opportunity Survey of Reserve Component Members (2011 WEOR). The first section of this report presents the sample design and sample selection procedures. The second and third sections provide information regarding the processing of sample and frame files and the statistical methodology used for weighting the sample of respondents. Response rates for the 2011 WEOR have also been computed in accordance with the RR3 recommendations of the American Association of Public Opinion Researchers.

15. SUBJECT TERMS

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